Reg.No.										

MANIPAL INSTITUTE OF TECHNOLOGY
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DEPARTMENT OF AERONAUTICAL & AUTOMOBILE ENGINEERING
VI SEM. B.TECH (AERONAUTICAL ENGG.) DEGREE END SEMESTER EXAMINATIONS (MAKE-UP) JULY. 2016

SUBJECT: AVIONICS (AAE-302)
REVISED CREDIT SYSTEM
(…/07/2016)

Time: 3 Hours. MAX.MARKS: 50

Instructions to Candidates:
- Answer **ANY FIVE FULL** questions.
- Missing data, if any, may be suitably assumed.

1A) What is Fly-By-light? (02)

1B) Explain the application of VOR/DME, TACAN and DVOR. (03)

1C) Draw the block diagram of the DME transponder and briefly explain working of each block function. (05)

2A) Sketch the flow of air data to key sub-system and briefly explain this. (02)

2B) Explain ILS category requirements by different regulators. (03)

2C) Explain the all features of redundancy and failure survival in FBW with neat diagrams. (05)

3A) Explain the electrical power distribution in B-787 aircraft. (02)

3B) Derive and sketch the beat frequency waveform of FM-CW Radar for receding target. (03)

3C) Explain the following with neat diagram:- (05)
(1)Binocular HMD and virtual cockpit, (2) DME transponder

4A) Explain the flare control with neat diagram. (02)

4B) Explain the HUD installation constraints and field of view with neat diagram. (03)

4C) Derive the equation of minimum power received for a radar receiver. Consider radar with antenna gain of 5000 and radiated power 200 MW. The wavelength of the transmitting energy is 0.05 m and the minimum (05)

detectable signal is 10^ (-9) watt. If an object is 200 km from the radar, what should be the minimum radar cross section of this object for detection to be possible? What is the factor of reduction of the received power w. r. to the transmitted power?

5A) Explain the engine control and management (02)

5B) Design the A380 Cockpit Layout (flight deck) with proper nomenclature? (03)

5C) Sketch the FMS architecture and explain the performance prediction of flight path & control of the vertical flight path profile. (05)

6A) Explain the information available on PFD during cruise flight mode. (02)

6B) Explain the three GNSS-INS Integration scheme with neat diagram. (03)

6C) What is SNS? Explain the position and velocity determination of aircraft using SNS. (05)